The brigade TUAV system will be the commander's "eye in the sky" to provide continuous, responsive, timely, and detailed situational awareness.

BRIGADE TACTICAL UNMANNED AERIAL VEHICLE SYSTEM

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Introduction

The Army is continually working on identifying opportunities associated with new and improved technologies. The Army's vision of the future battlefield indicates that conflicts will be enabled and driven by improvements in friendly and threat situational awareness (SA), command and control (C2), and targeting technologies. Clearly, the foundation capability to fight and win on the future battlefield will be substantially improved by expanding SA through use of redundant systems that provide near-real-time and relevant images. Studies and battlefield experience have demonstrated that this capability will be optimized if it includes space, air, and ground systems. Tactical unmanned aerial vehicles (TUAVs) are a critical part of the triad's air leg.

The brigade TUAV system is being developed as an acquisition category (ACAT) II program under the cognizance of the Project Manager (PM), TUAVs, Redstone Arsenal, AL. This ground maneuver brigade unmanned aerial vehicle (UAV) will allow commanders to see and understand their battlespace and gain dominant SA by providing a near-real-time, highly accurate, sustainable capability for reconnaissance, surveillance, target acquisition, and battle damage assessment. The images and telemetry data from air vehicles (AVs) can be used by brigade commanders and their staffs in the tactical operations center, the brigade's subordinate maneuver battalions, direct support artillery, or supporting aviation assets.

Acquisition Strategy

The Army's requirement to field a capable ground maneuver brigade commander's UAV system as quickly as possible required acquisition reform and streamlining initiatives to be implemented, including cost as an independent variable and trading performance against total ownership cost. Specifically, the acquisition strategy is based on a full and open competition that required offerors

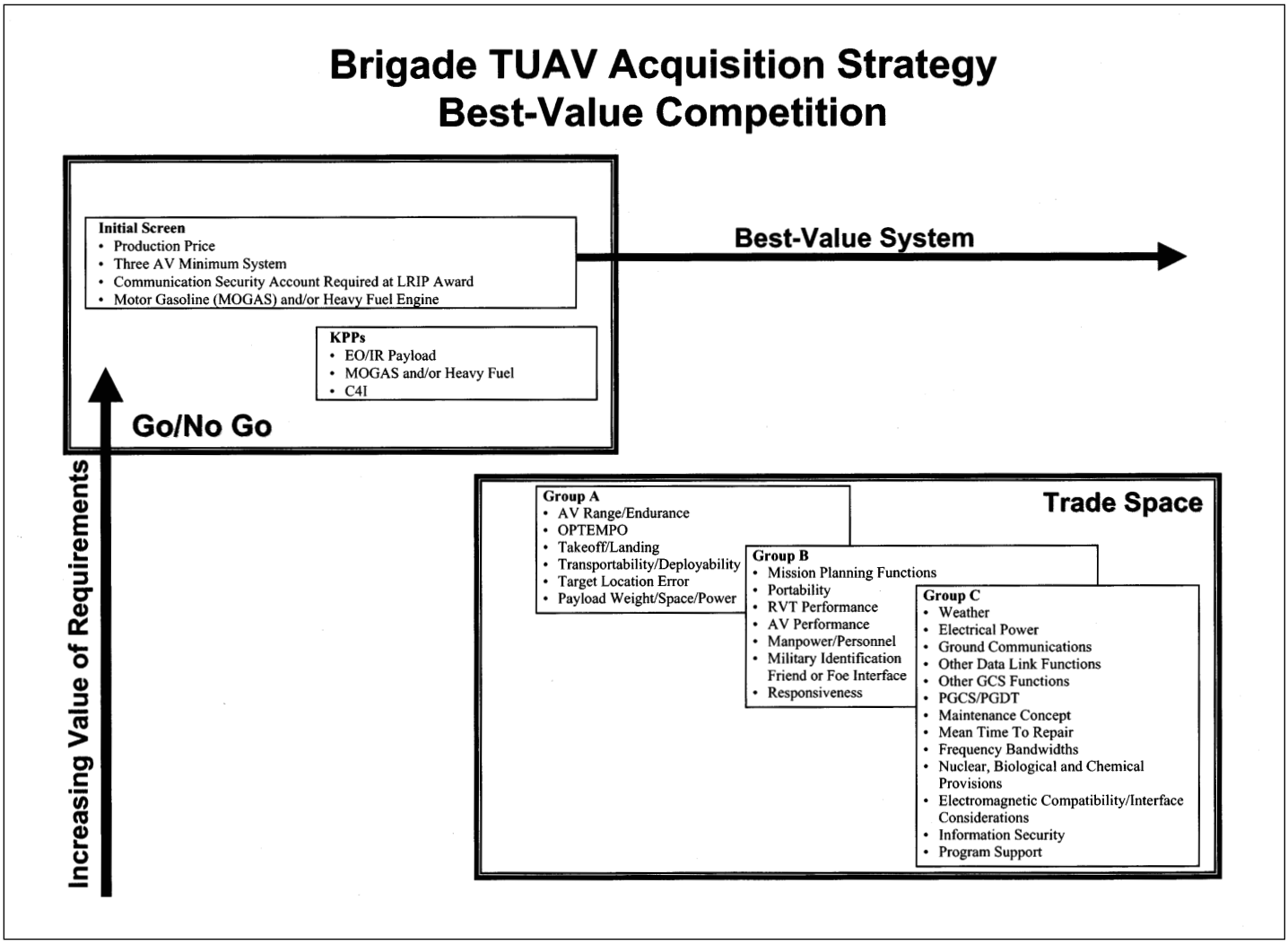
to submit as part of their proposals a performance-based specification and statement of work based on a government-defined statement of objectives.The acquisition strategy included a detailed requirements analysis phase that assessed and categorized all requirements and grouped them into trade space. (Trade space is a technique to prioritize requirements against cost. As shown in the accompanying chart, Group A is a higher priority than Group B, and Group B is a higher priority than Group C.)

During the requirements analysis phase, the PM and combat developer worked together to identify key performance parameters (KPPs) and prioritize the threshold requirements into trade space and group them as depicted in the accompanying chart. The primary ground rule for the prioritization effort was that initial production system configuration would maximize the use of mature, commercial off-the-shelf hardware to provide a "no-bells-and-whistles" system. It was understood that the system configuration would not meet all threshold requirements, and the system would be modified in production through a block-upgrade approach to achieve a time-phased incorporation of objective and growth capabilities.

Source-Selection Approach

A formal source-selection process was used that included a two-phase evaluation. The first phase began with an evaluation to determine whether the offerors' proposals met the minimum-entry requirements. Specifically, the proposals were evaluated based on the full-rate production price, system configuration, communication security, and air vehicle fuel requirement. For those offerors who met the initial screening criteria, a follow-on evaluation of each offeror's oral presentation and supporting documentation was conducted. The first phase concluded with the four best-qualified vendors being awarded firm-fixed-price contracts to conduct a flight system capability demonstration, with options to begin engineering and manufacturing development (EMD) and low-rate initial production (LRIP).

The second phase of the source-selection process evaluated each vendor's system against mission-representative flight scenarios during a system capability demonstration. Vendor performance was evaluated to determine the extent each system met the KPPs and trade space requirements. The demonstration was conducted at Fort Huachuca, AZ, and allowed each vendor a 3-week period to demonstrate performance during operational tempo (OPTEMPO) exercises and technical tests. The demonstration was an invaluable tool in establishing a baseline for assessing the suitability and operational



effectiveness of each system on a directly comparable basis. The results were then used in the technical evaluation of proposals and assessed against cost data to determine best value. Based on this determination, the government exercised the option with the AAI Corp. to enter into EMD and LRIP on a fixed-price incentive basis for its Shadow 200 System to fulfill the Army's brigade TUAV requirement. (Shadow 200 is the contractor's name for the brigade TUAV system.)

System Description

The basic brigade TUAV platoon is comprised of three air vehicles, two ground control stations integrated on High Mobility Multipurpose Wheeled Vehicles (HMMWVs), four remote video terminals (RVTs) and antennas, one portable ground control station (PGCS) and portable ground data terminal (PGDT), one HMMWV AV transport and launcher trailer, one HMMWV personnel and equipment transport and trailer, and associated maintenance equipment.

The brigade TUAV air vehicle has a wingspan of 13 feet, can carry a payload of 60 pounds, has a gross takeoff weight of more than 300 pounds, and can loiter above a target area 50 kilometers distant for more than 4 hours. The ceiling for the air vehicle is 15,000 feet. It is equipped with a basic electro-optic/infrared (EO/IR) payload that will be upgraded as part of a block-upgrade program. The system is compliant with the Joint Technical Architecture-Army and Defense Information Infrastructure Common Operating Environment and has command, control, communication, computers and intelligence (C4I) connectivity to the Joint Surveillance Target Attack Radar System Common Ground System, Advanced Field Artillery Tactical Data System, and the All Source Analysis System.

Program Status

The brigade TUAV Program is in Acquisition Life Cycle Phase II, EMD. The program is scheduled to begin Initial Operational Test and Evaluation (IOT&E) in April 2001, then undergo its Milestone III review with the Army Acquisition Executive for approval to begin production, fielding, deployment, and operational support in September 2001. To accelerate the production and fielding schedule, the acquisition strategy includes a second LRIP decision in February 2001. Based on approval of the second LRIP procurement, the prime contractor will be able to further refine and improve manufacturing and production processes and build up to full-rate production. Additionally, an approximate 7-month gap in the production process between the first LRIP and full-rate production will be eliminated. Another benefit of the LRIP procurement is that it permits the Army to field a brigade TUAV platoon 10 months earlier than originally planned. Based on the accelerated acquisition strategy, the initial operational capability of the brigade TUAV is planned for the second quarter of FY02.

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Block Upgrades

The brigade TUAV program will employ a block-upgrade approach throughout the system's life cycle. This approach is a key element of the acquisition strategy that will allow the PM to optimize the use of program resources to enhance system configuration. Block 0 is the configuration shown during the system capability demonstration. The Block I configuration will be delivered as LRIP and be compliant with the KPPs and the trade space requirements proposed by the prime contractor in its best-value system. The Block II configuration will be delivered in full-rate production, will consist of the Block I configuration, and will incorporate modifications identified during IOT&E and other improvements to meet the Operational Requirements Document threshold and objective requirements. Further upgrades beyond Block II will be incorporated based on future user requirements and the availability of horizontal technology integration insertion opportunities.

Conclusion

As the Army transforms into a rapidly deployable objective force, the role of UAVs will become even more significant. The objective force will combine the lethality and survivability of a heavy unit with the deployability of a light unit. To accomplish this, a significant portion of the objective force will consist of scouts and military intelligence units equipped with UAVs. The brigade TUAV will be the first step toward this capability and will be the basis of a single Army UAV system comprised of common C2 elements and mission-specific AVs and payloads. Clearly, the future is bright for Army UAVs. UAVs intended for brigade and higher headquarters in the near term will be joined by micro- and mini-UAVs for the small unit commander. UAVs, with their many payloads, will be the "dominant eye" for the future force commander and a significant force multiplier.

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